

Common Council and Plan Commission

September 30, 2014



I-94, HUDSON AREA Interchange Study



Agenda

- Study Background
 - Study Limits
 - Purpose and Need
- Study Oversight
- Traffic Operations Analysis
- Preliminary System Concepts and Evaluation
 - Down-Select Process
- Concepts Currently Being Considered
- Next Steps/Schedule



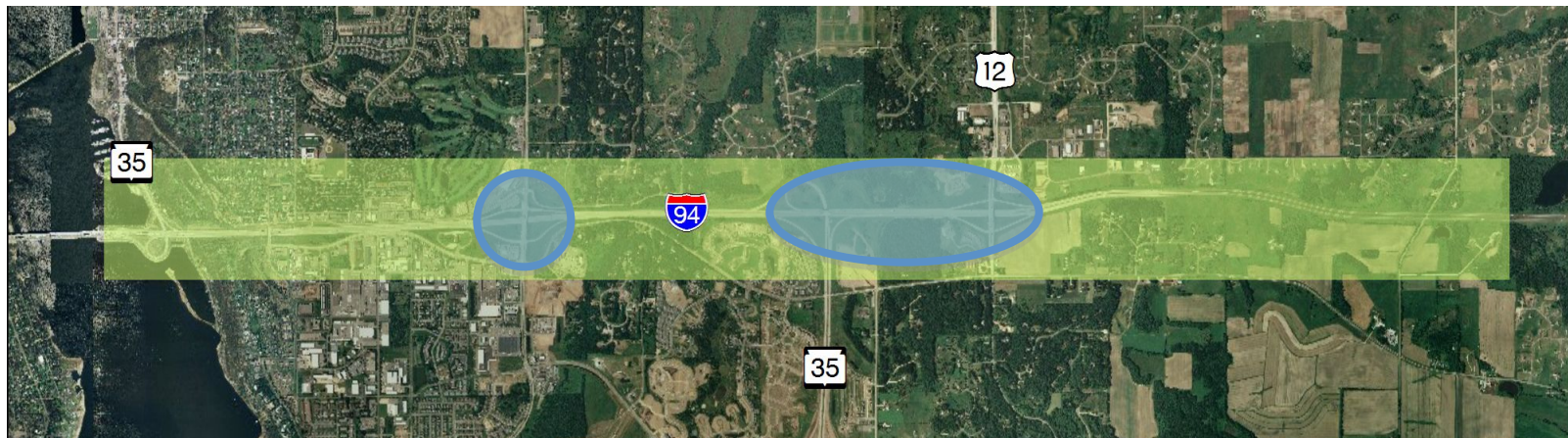
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Study Limits

- I-94 from State Line to East of USH 12 (approximately six miles)
- With focus on Carmichael Road and USH 12/ WIS 35 interchange areas



Purpose and Need

- Traffic growth in the study area and surrounding communities will result in traffic volume increases of 40 to 80 percent by year 2035 on I-94, Carmichael Road and USH 12
- This additional traffic will generate traffic operational issues at the I-94/Carmichael Road interchange area
- Significant system improvements are needed to produce efficient traffic flow on the regional and local system



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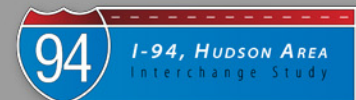
Study Oversight

- **Project Management Team**
 - WisDOT planning and technical staff
 - Guide and direct overall study process
 - Met seven times between July 2012 and June 2014
- **Local Advisory Committee**
 - Representatives from:
 - WisDOT, St. Croix County, City of Hudson and the Town of Hudson
 - Provide feedback on the study process and recommendations
 - Met five times between August 2012 and August 2014
- **Public Involvement Meeting (PIM)**
 - Held July 1, 2014



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Traffic Operations Analysis

- Freeway and intersection analysis has been completed for three horizon years
 - Existing conditions (2012)
 - Intermediate design year (2025)
 - Horizon year (2035)
- St. Croix County Travel Demand Forecast Model was updated and used to develop future year forecasts
 - Development assumptions are consistent with local plans
 - Roadway network assumptions are consistent with local and regional plans



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Traffic Forecasts – I-94

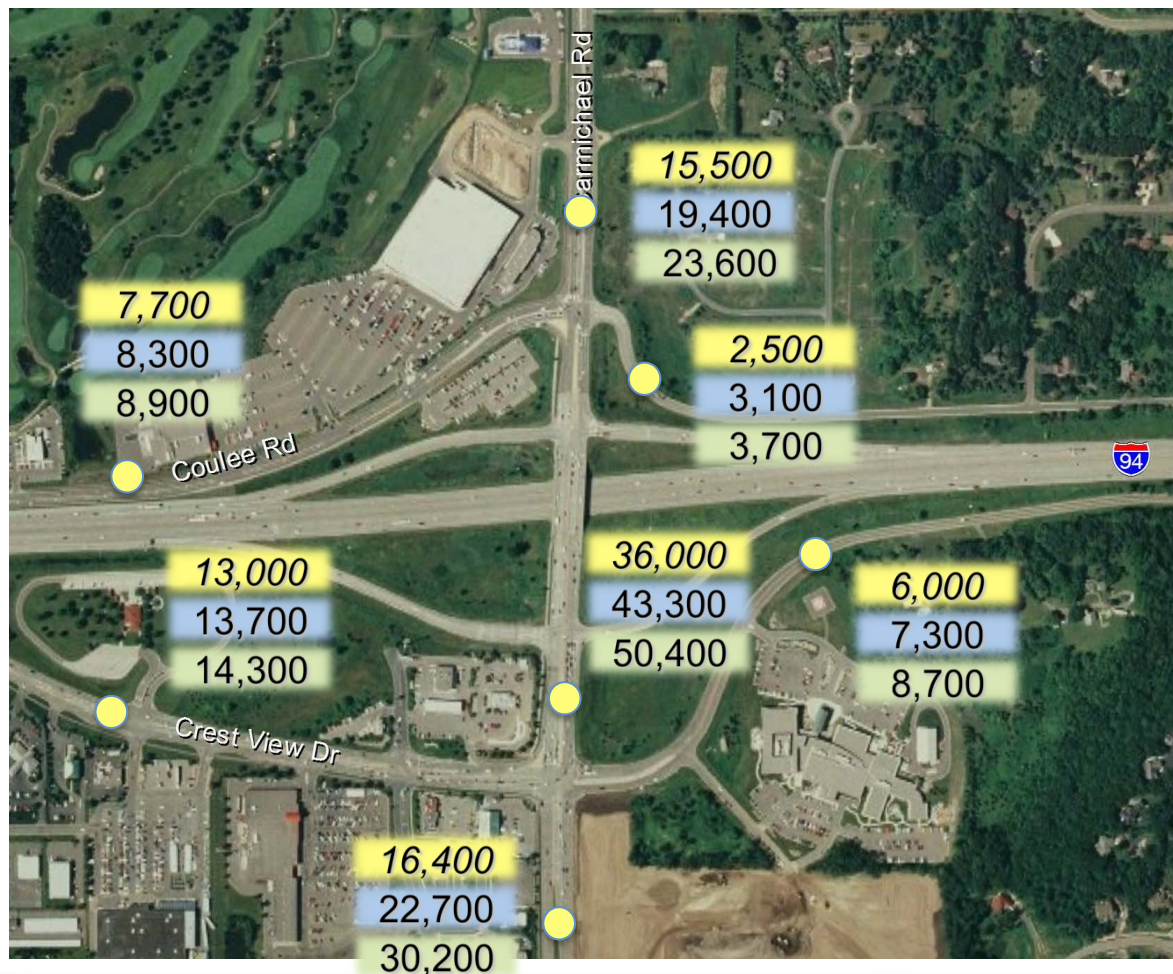
Year 2012 Daily

Year 2025 Daily

Year 2035 Daily



Traffic Forecasts – Carmichael Road



Year 2012 Daily
Year 2025 Daily
Year 2035 Daily

Traffic Operations Analysis

- Level of Service (LOS)
 - Level of service is a grade (A through F) that is assigned to intersections and roadway segments
 - LOS A through C are considered acceptable
 - Intersections - Based on average vehicle delay

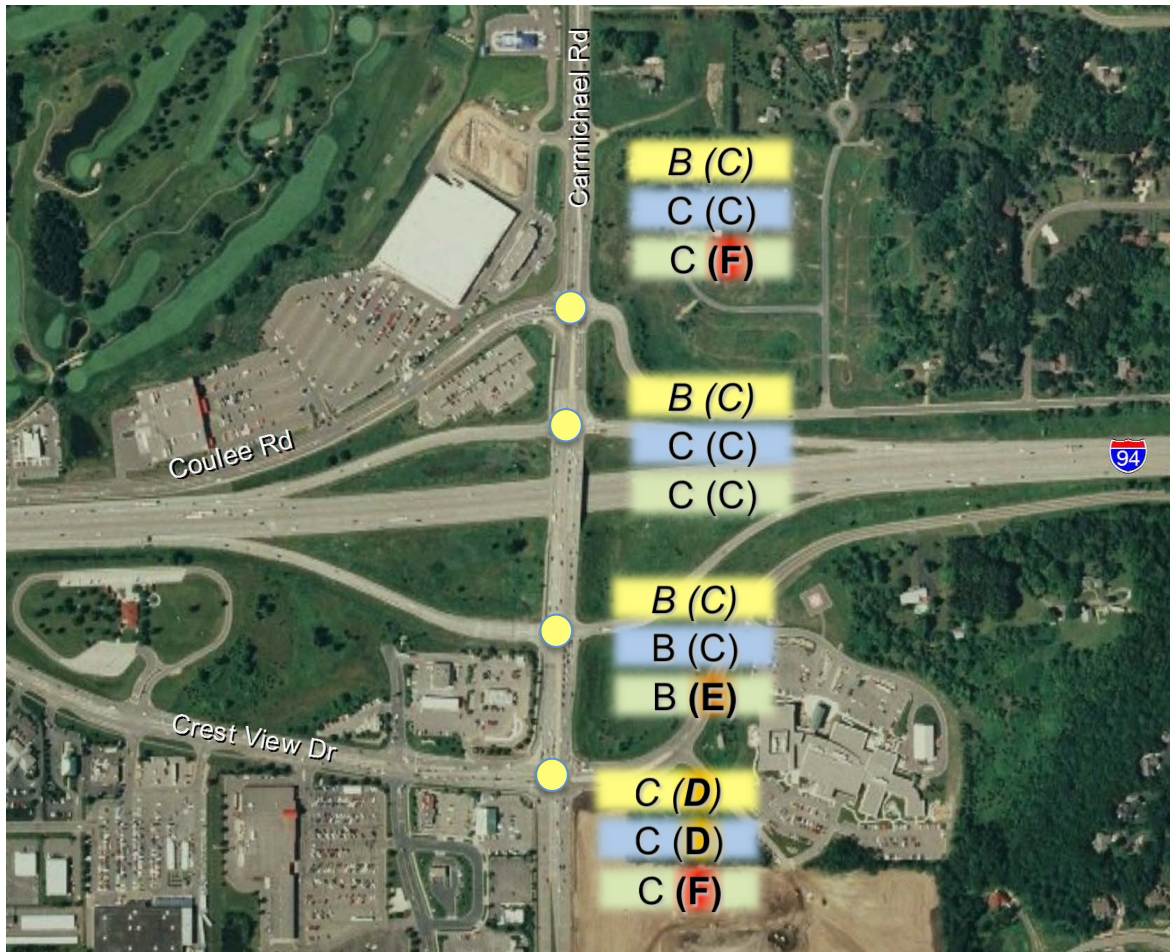


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No Build Intersection Operations Level of Service Results



Year 2012

Year 2025

Year 2035

X = A.M. Peak Hour
(X) = P.M. Peak Hour

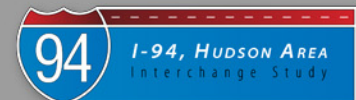
Concept Development and Evaluation

- I-94 and Carmichael Road
 - Seven system concepts were developed and evaluated at the interchange area
 - Non-interchange roadway improvements were also evaluated
 - Overpass east of Carmichael Road
 - Overpass west of Carmichael Road
 - Other roadway connections
 - Concepts were evaluated based on:
 - Traffic operation issue “flags” – Level of Service (LOS)
 - Property impacts
 - Local road impacts
 - Pedestrian accommodations
 - Bridge needs



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Concept Development and Evaluation

- I-94 and Carmichael Road
 - Two rounds of evaluation were completed
 - Non-interchange improvements were found to provide insufficient relief to the operational “flags” at the interchange, therefore not carried forward
 - Five of the seven interchange system concepts were dismissed due to:
 - Unacceptable LOS at the interchange (Concepts A, B and C)
 - Traffic queue lengths and bridge requirements (Concepts E and F)
 - Two interchange system concepts remain as potential solutions
 - Two loops with modified frontage roads (Concept D)
 - Diverging diamond interchange (Concept G)

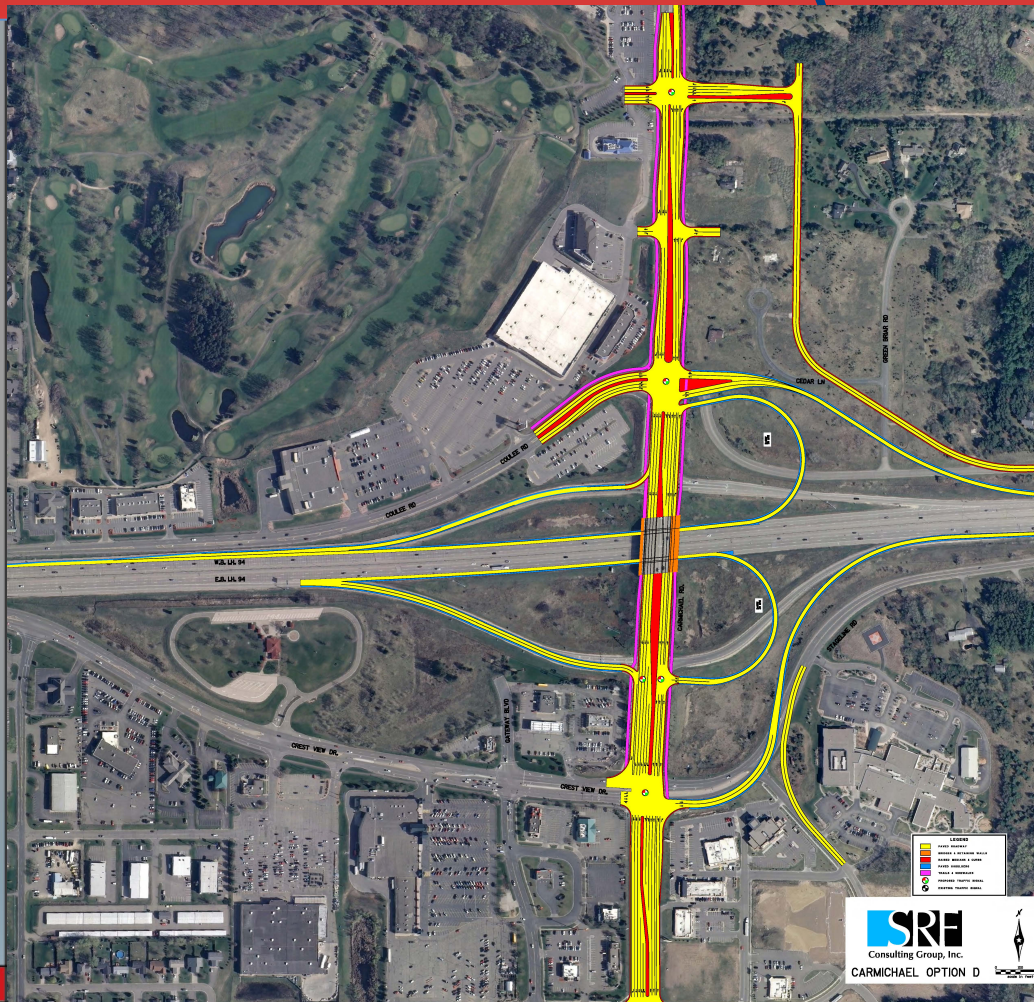


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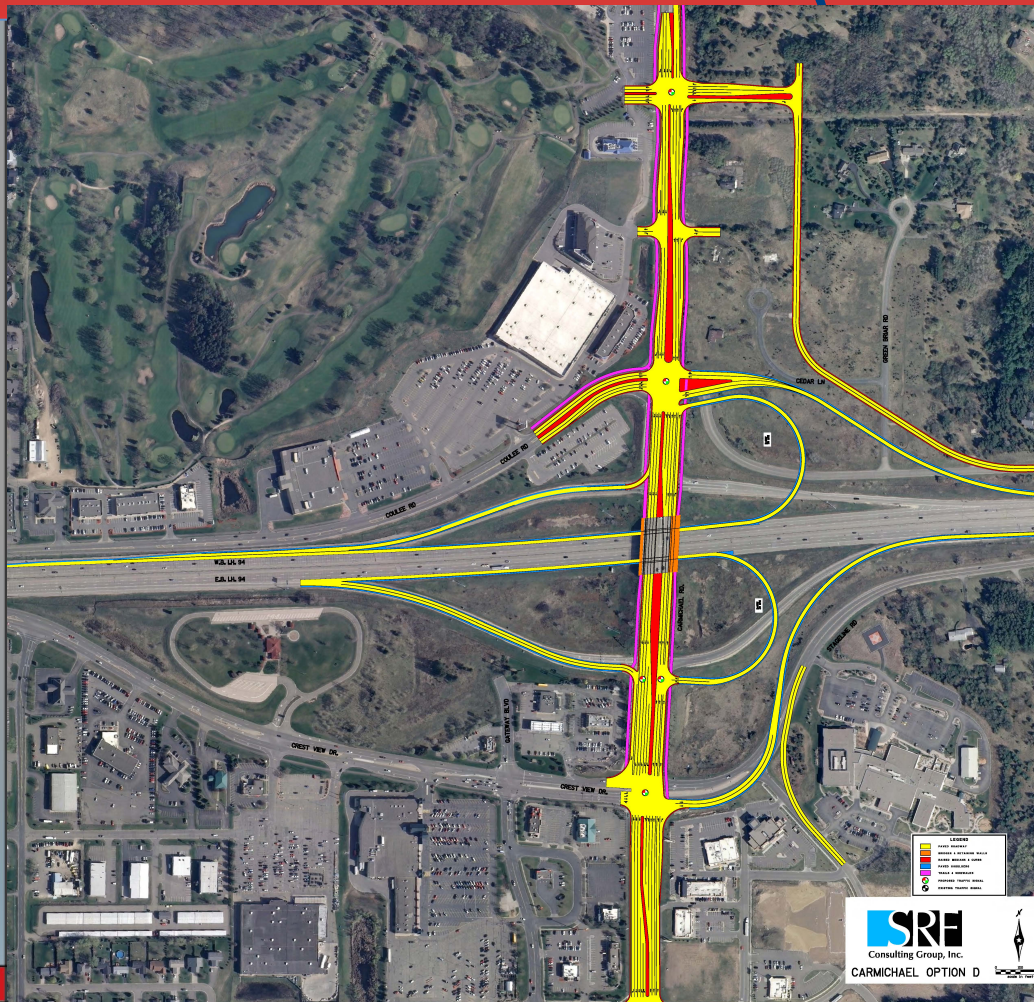
Two Loops with Modified Frontage Roads (Concept D)



Geometric changes

- Addition of loops in the northeast and southeast quadrants
- East ramps to/from I-94 connect at Coulee Road and Crest View Drive
- East frontage roads are relocated farther away from I-94
- Bridge widening required

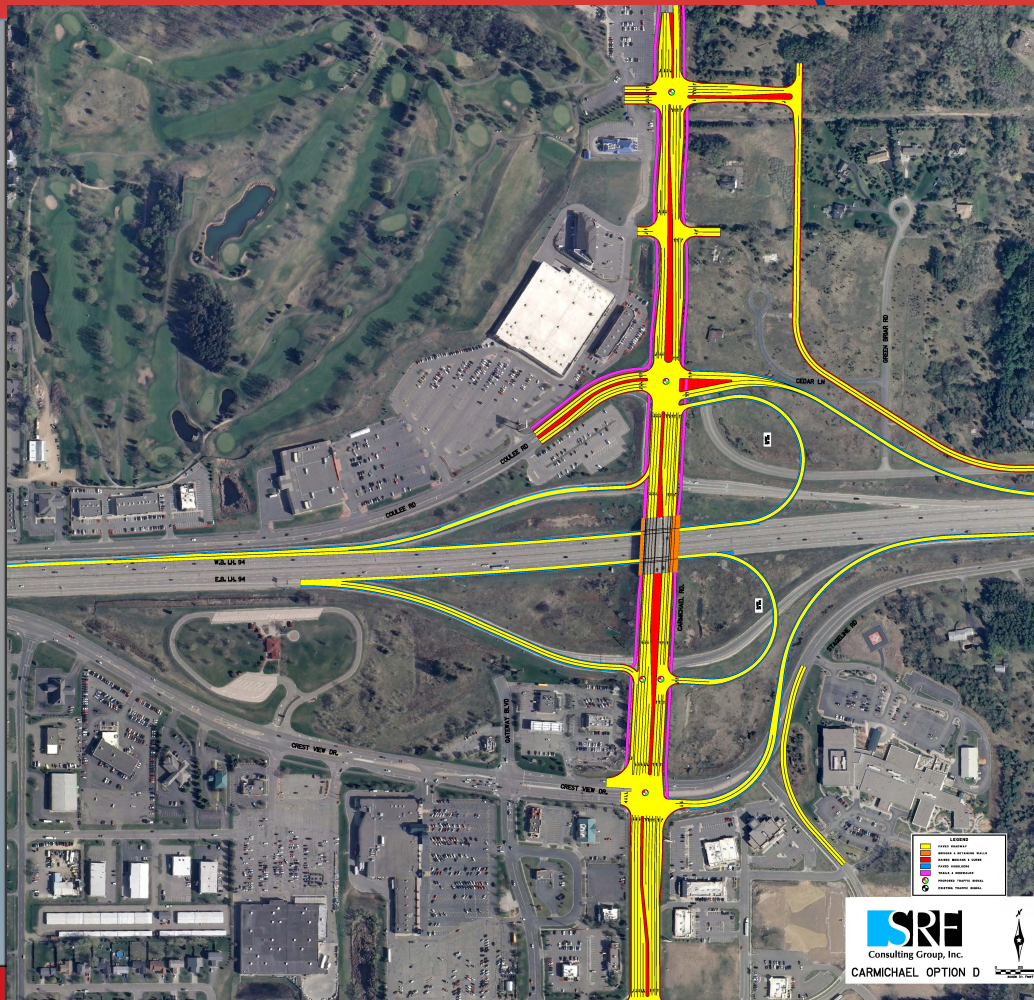
Two Loops with Modified Frontage Roads (Concept D)



Access Considerations

- The frontage road in the northeast quadrant will be relocated
 - Actual location may change
 - Location of new road may impact future development plans
- Stageline Road would access Carmichael Road via Center Drive

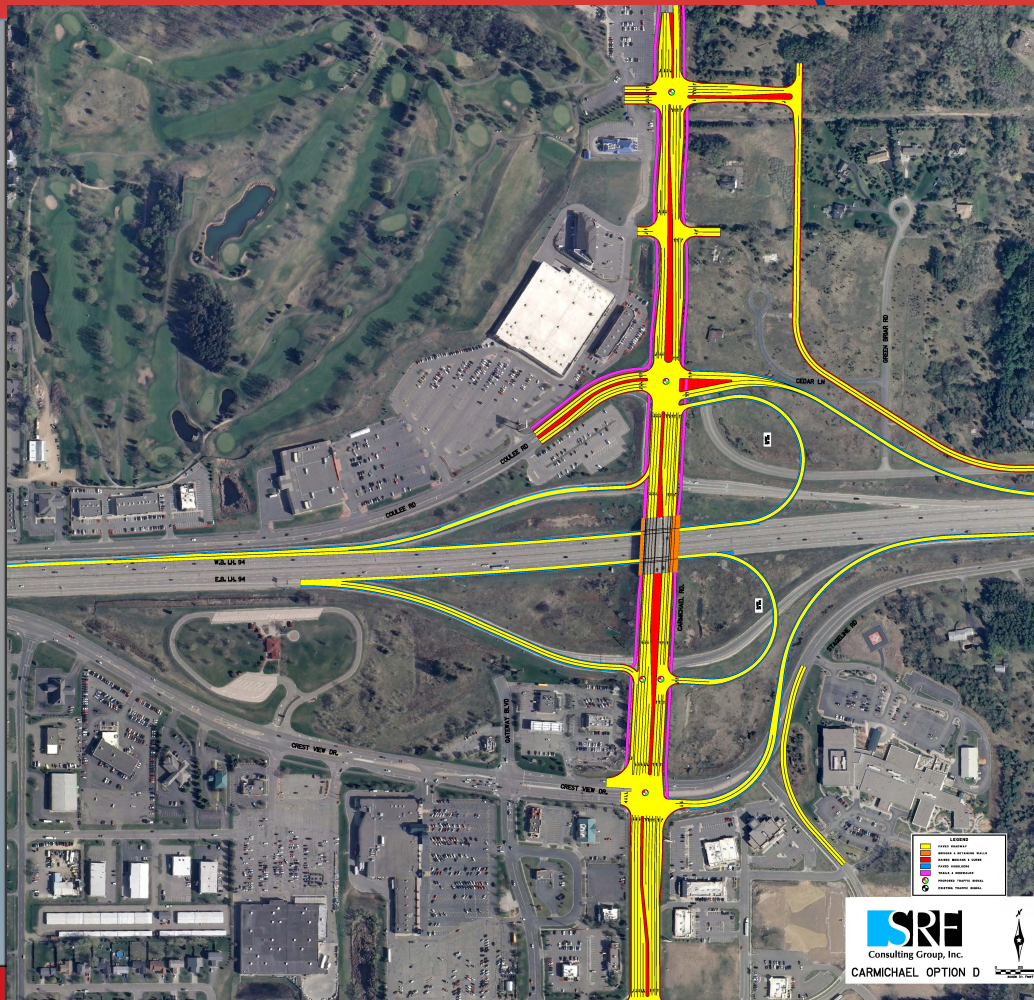
Two Loops with Modified Frontage Roads (Concept D)



Operational Benefits

- All intersections will operate at LOS C or better under year 2035 conditions
- Design can accommodate an additional 15 to 20 percent of traffic volumes beyond year 2035 (concept with most reserve capacity)

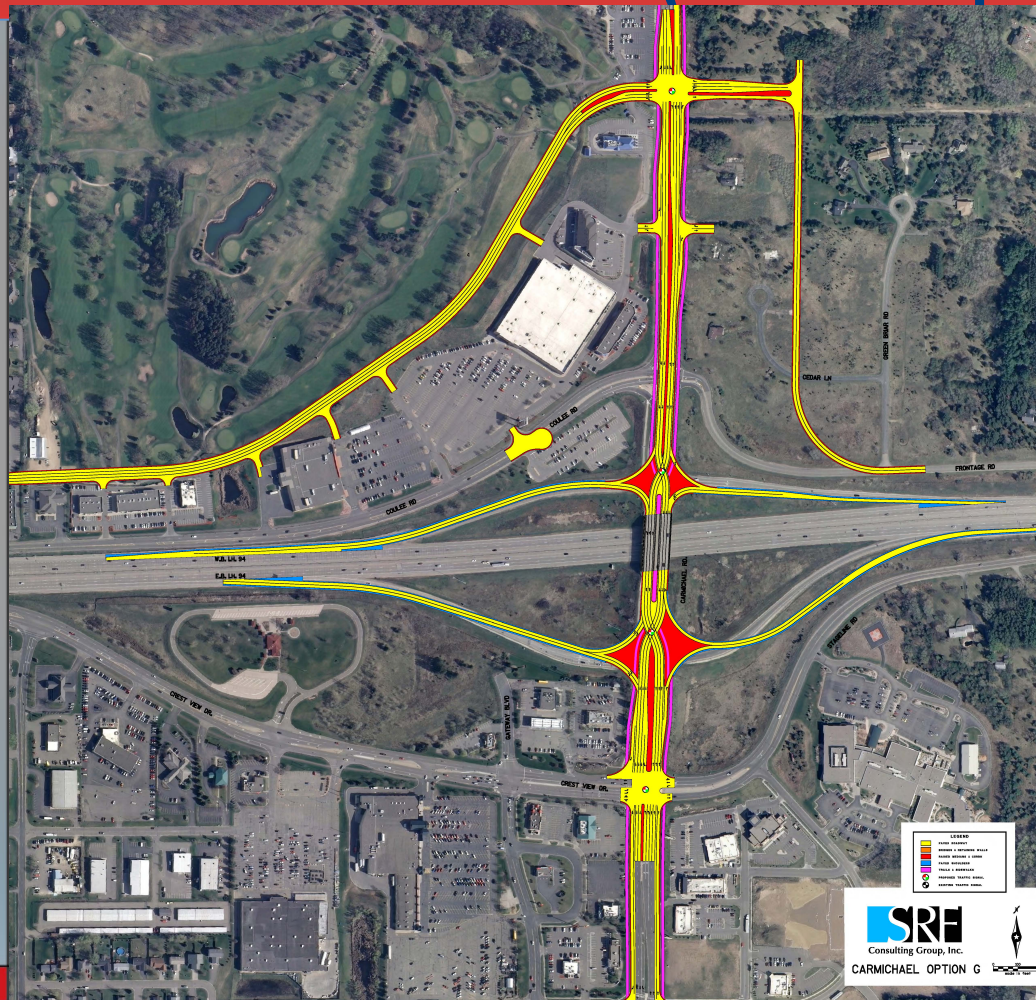
Two Loops with Modified Frontage Roads (Concept D)



Costs/Impacts

- \$25M to \$30M in construction costs
- Requires 25 to 30 acres of right-of-way

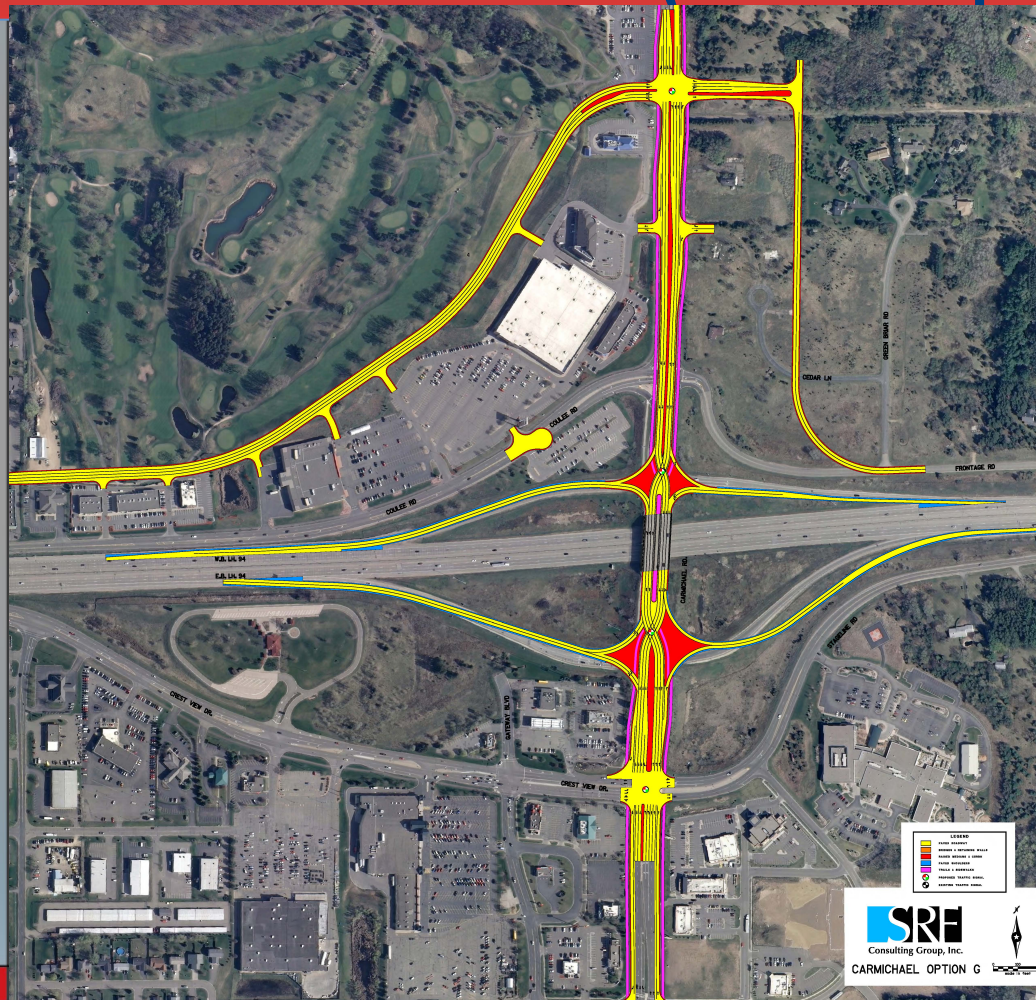
Diverging Diamond Interchange (Concept G)



Geometric Changes

- Northbound/southbound lanes “cross over” at the interchange
- Coulee Road is closed at Carmichael Road
- New backage road required in the northwest quadrant
- Bridge widening not required

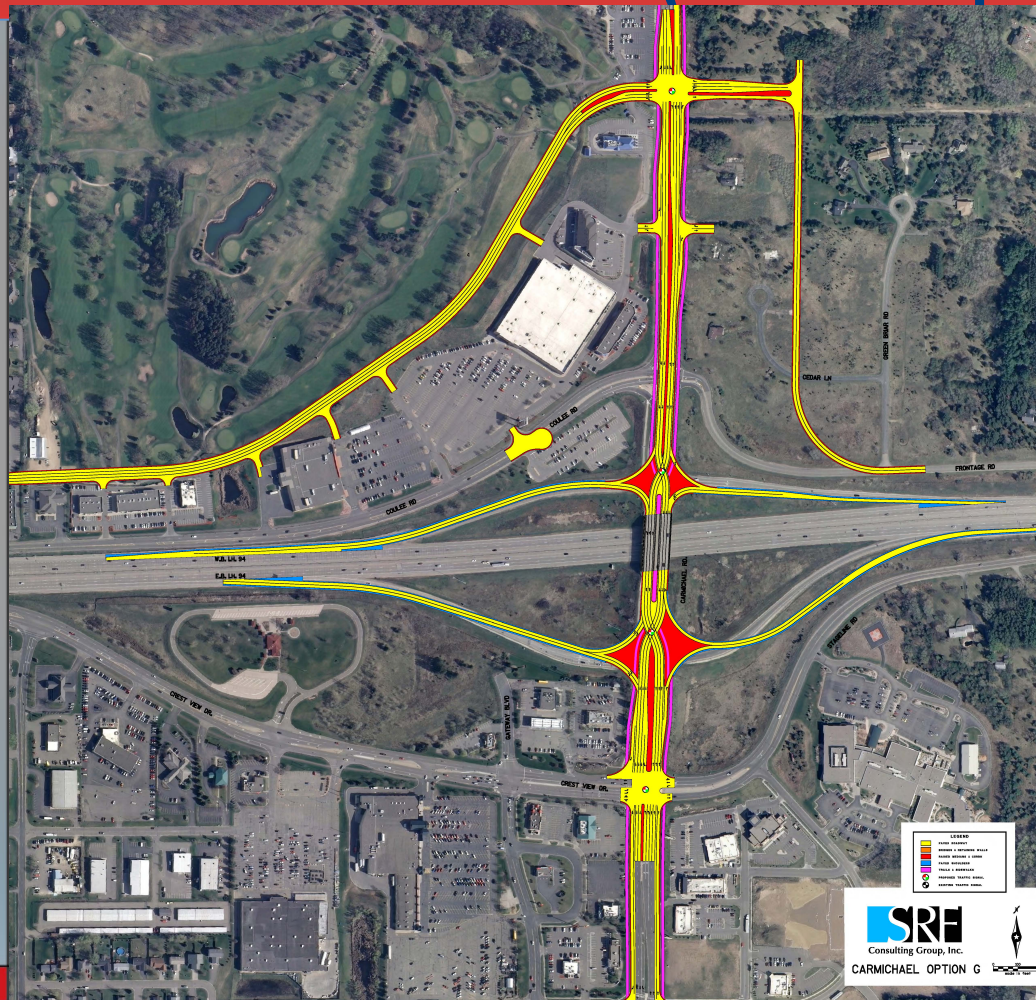
Diverging Diamond Interchange (Concept G)



Access Considerations

- Businesses in the northwest quadrant will access Carmichael Road via a new backage road
- The frontage road in the northeast quadrant will be relocated
 - Actual location may change
 - Location of new road may impact future development plans

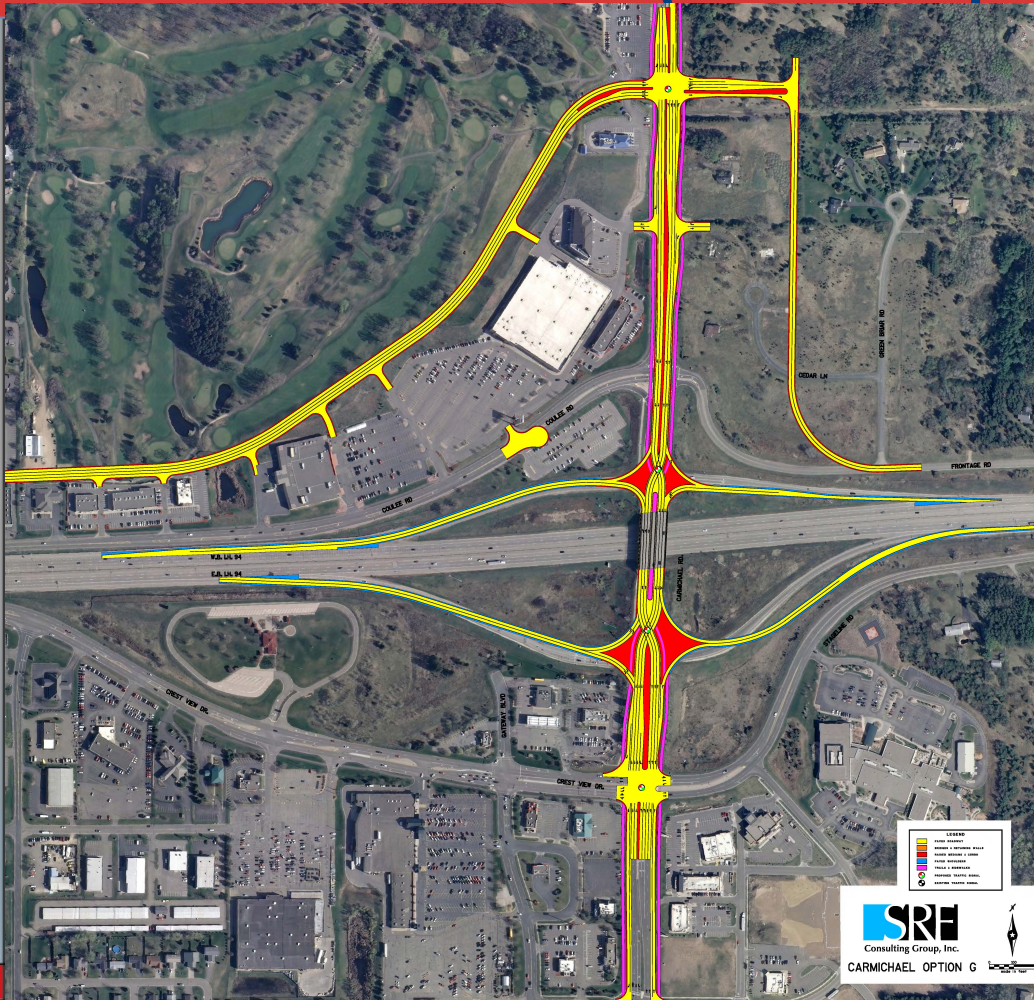
Diverging Diamond Interchange (Concept G)



Operational Considerations

- All intersections, except one, will operate at LOS C or better under year 2035 conditions
 - Crest View Drive (LOS D)
- Design can accommodate an additional 5 percent of traffic volumes beyond year 2035
- Does not accommodate through movement as well as Concept D

Diverging Diamond Interchange (Concept G)



Costs/Impacts

- \$20M to \$25M in construction costs
- Requires 30 to 35 acres of right-of-way

WisDOT Perspective

- Both interchange alternatives are acceptable to WisDOT
- The interchanges alternatives are not equal
 - Alternative D accommodates a significantly higher number of vehicles
 - Alternative D is the better alternative to move traffic through the Carmichael Road corridor
 - Easier to coordinate the ramp signals with the other Carmichael signals
- Local cost share will be the same for both alternatives
 - (approximately 50%)



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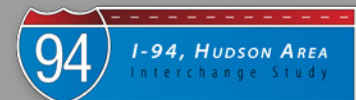
Schedule

- I-94 and Carmichael Road
 - Select Alternative – October 2014
 - Preserve Selected Alternative
 - Official Mapping by Hudson, WisDOT, or both
 - No Construction Scheduled



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Thank You

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